UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF PREVENTION,
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

RE: Response to Bayer Document- Trichlorfon, Case # 0104, Health Effects Division Preliminary Human Health Risk Assessment

TO: Kylie Rothwell
Reregistration Branch 3
Special Review and Reregistration Division (7508C)

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THRU: Elizabeth Behl, Chief
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DATE: October 22, 1999

This memo is in response to Bayer's comments on the drinking water portion of the EPA/HED Preliminary Human Health Risk Assessment for trichlorfon. This document will follow Bayer's outline and provide a brief response to the points raised by Bayer.

Comment 1

EFED's farm pond drinking water assessment modeling is used as a screening tool. EFED is open to consideration of well validated higher tier modeling. EFED recognizes the concerns regarding the use of the farm pond scenario and is currently evaluating the incorporation of reservoirs considered to be vulnerable to pesticide runoff in the modeling assessment of drinking water. EFED conducted a comparison of contaminant predictions for the farm pond scenario and an index reservoir of larger surface area, volume, and drainage area for presentation to the July, 1998 SAP. Predicted

concentrations of hypothetical uses of selected pesticides were higher in the index reservoir than in the farm pond when crop area factors were not considered. However, when crop area factors were incorporated in the assessment were presented to the SAP, predicted index reservoir concentrations were slightly lower (by a factor of 0.3 to 0.5) than farm pond predictions.

Furthermore, drinking water-based concerns, triggered by modeling results, typically lead to an evaluation of available water monitoring data. EFED is in the process of refining the drinking water model approach to include the effect of crop area factor on predicted drinking water concentrations. EFED is open to the consideration of statistically representative, technically well conducted monitoring studies for use in exposure assessments.

EFED is currently moving towards a probabilistic approach for modeling that will enable increased consideration of a parameter's distribution, where available data are of sufficient quantity and quality, in the calculation of EECs. Until such time that EFED adopts a probabilistic drinking water assessment, EFED will continue to employ the current approach.

Comment 2

A tiered system of modeling is used in EFED which is designed to minimize the amount of analysis which is required to register any given chemical. Each of the four tiers is designed to screen out pesticides by requiring higher, more complex levels of investigation only for those that have not passed the next lower tier. Each tier screens out a percentage of pesticides from having to undergo a more rigorous pre-registration review.

The first tier is designed as a coarse screen and estimates expected concentrations from only a few basic chemical parameters. The tier one program, the GENeric Expected Environmental Concentration Program (GENEEC) uses a candidate chemical's soil/water partition coefficient and degradation half-life values to estimate runoff from a ten hectare field into a one hectare by two meter deep pond. The program is generic in that it does not consider differences in climate, soils, topography or crop in estimating potential pesticide exposure.

Chemicals failing to pass the tier one analysis, move on to the tier two modeling. The second tier is currently the most common type of exposure analysis. Tier two analysis looks at one 'high exposure' site over multiple years for each major crop on which it is used (Nelson et al., 1997).

Comment 3

The EFED/EFGWB modeling summary referenced in the RED on page 36 is included as a separate attachment. The input and output files for the GEENEC analysis are given below:

(1) Trichlorfon

RUN No. 1 FOR trichlorfon INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY DRIFT	INCORP DEPTH(IN)
8.170(8.170)	1 1	2.0	120000.0	1.0	.0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)	COMBINED (POND)
6.40	0	N/A	.00- .00	32.00	32.00

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
455.35	440.91	369.52	266.12

RUN No. 4 FOR trichlorfon INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY DRIFT	INCORP DEPTH(IN)
8.170(13.792)	3 7	2.0	120000.0	1.0	.0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)	COMBINED (POND)
6.40	0	N/A	.00- .00	32.00	32.00

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
772.74	748.31	627.15	451.67

RUN No. 6 FOR trichlorfon INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY DRIFT	INCORP DEPTH(IN)
8.170(15.373)	52 7	2.0	120000.0	1.0	.0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)	COMBINED (POND)
6.40	0	N/A	.00- .00	32.00	32.00

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
880.24	852.70	714.69	514.71

(2) DDVP

RUN No. 1 FOR ddvp INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY DRIFT	INCORP DEPTH(IN)
4.570(4.570)	1 1	37.0	15600.0	1.0	.0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)	COMBINED (POND)
.42	0	5.20	.63- 77.30	.00	4.87

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
225.74	184.76	76.90	30.35

RUN No. 2 FOR ddvp INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY DRIFT	INCORP DEPTH(IN)
4.570(4.570)	3 7	37.0	15600.0	1.0	.0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)	COMBINED (POND)
.42	0	5.20	.63- 77.30	.00	4.87

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
226.86	185.78	77.34	30.52

RUN No. 3 FOR ddvp INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY DRIFT	INCORP DEPTH(IN)
4.570(4.570)	52 7	37.0	15600.0	1.0	.0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)	COMBINED (POND)
.42	0	5.20	.63- 77.30	.00	4.87

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
227.04	185.94	77.40	30.55

References

Nelson, Henry, R.D. Parker, R.D. Jones and S. Mostaghimi. 1997. Use of Computer Modelling, Monitoring Data and Comulative Exceedence Curves in Aquatic Risk Assessment, to be published in, Ecological Risk Assessment of Pesticides: Enhancing the Process. Society of Environmental Toxicology and Chemistry.